

## REMARKS

Reexamination and reconsideration of the application are requested.

Basically, the Examiner has rejected the claims citing prior art which subtracts the amplitudes of two time-varying signals received from a location. For example, if the amplitude of a first time-varying signal from a location was five, and the amplitude of a second time-varying signal from that location was two, subtracting the second signal from the first signal results in the number three and a pixel intensity related to the number three would be associated with that location in an ultrasound image of anatomical tissue which included that location. Basically, Applicant's claims subtract a second time-varying signal from a location (see Figure 5 of the application) from a first time varying signal from that location (see Figure 4 of the application) which results in a time-varying difference signal (see Figure 7 of the application) and Applicant's claims then generate an indication from the difference signal, wherein the indication shows the effect of discrete medical treatment in the location in the anatomical tissue. It is clear that the time-varying difference signal (see Figure 7 of the application) is not the same as the number three or any other number which results from the subtraction of the amplitudes of two signals.

A question might be raised whether the difference in amplitudes of two time-varying signals is the same as the amplitude of the difference of two time-varying signals. The answer is no (see page 8, lines 4-7 of the specification). For example, consider a time-varying sine wave signal [ $y_1 = \sin(x)$  where  $x$  is time] having an amplitude of one and a time-varying cosine wave signal [ $y_2 = \cos(x)$ ] having an amplitude of one. The difference in the amplitudes of the two signals is zero. However, subtracting the cosine wave signal from the sine wave signal results in a signal [ $y_3 = \sin(x) - \cos(x)$ ] which has an amplitude of about 1.4 which is not an amplitude of zero. See Attachment A for a graph of  $\sin(x)$ ,  $\cos(x)$  and  $\sin(x) - \cos(x)$ .

The Examiner's rejection of claims 1-4, 9-10, 16-19, 23-24 and 30, as being "anticipated", under 35 U.S.C. 102, or in the alternative as being "obvious", under 35 U.S.C. 103, is respectfully traversed. The Examiner rejects these claims as being unpatentable over Okazaki '580 or as being unpatentable over Okazaki in view of Dory '258. Claims 2-4 and 9-10 depend from claim 1, and claims 17-19 and 23-24 depend from claim 16.

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Amendment After Final

Claim 1 requires receiving time-varying first and second signals  $F_1$  and  $F_2$  (see figures 4-5) from the same location and subtracting the second signal from the first signal to derive a time-varying difference signal (see figure 7).

Okazaki discloses in figure 4A a pixel gradation graph 22 of an image from a kidney before treatment, discloses in figure 4B a pixel gradation graph 22' of an image from the kidney during treatment, and discloses in figure 4C a pixel gradation graph 23 obtained from the subtraction of the pixel gradation graphs 22 and 22'. Note that each graph is a graph of pixel gradation versus position (i.e., location), and that pixel gradation reflects the amplitude of the received signal. Note that figure 2 of Okazaki discloses an imaging scan area 27 which includes locations in line with, and to the sides of, the kidney 18. The amplitude of the signal at a first location (for example, a location one inch to the right of the pixel gradation axis) of a plurality of locations in figure 4B of Okazaki is subtracted from the amplitude of the signal at the same first location of the plurality of locations in figure 4A to yield the difference in the amplitudes at the same first location of the plurality of locations in figure 4C. As noted in the specification, page 8, lines 4-7, computing the amplitude of the signal differences is different from computing the differences in signal amplitude.

Basically, applicant's claim 1 requires subtracting time-varying signals received from the same location to obtain a time-varying difference signal whereas Okazaki discloses subtracting the amplitudes of two time-varying signals received from the same location to obtain a difference in amplitudes.

Claims 16 and 30 likewise require deriving a time-varying difference signal or a set of time-varying difference signals, whereas Okazaki only discloses differences in amplitudes of time-varying signals.

The Examiner's rejection of claims 1-4, 9-10, 16-19, 23-24 and 30, as being "anticipated", under 35 U.S.C. 102, or in the alternative as being "obvious", under 35 U.S. C. 103, is respectfully traversed. The Examiner rejects these claims as being unpatentable over Lizzi '726 or as being unpatentable over Lizzi '726 in view of Dory '258. Claims 2-4 and 9-10 depend from claim 1, and claims 17-19 and 23-24 depend from claim 16.

Claim 1 requires receiving time-varying first and second signals  $F_1$  and  $F_2$  (see figures 4-5) from the same location and subtracting the second signal from the first signal to derive a time-varying difference signal (see figure 7).

Lizzi discloses in figure 3 acquiring first, second and third image scans and subtracting the second image scan from the third image scan (block 340) and subtracting the first image scan from the third image scan (block 345) to decide when to end therapy (block 350). A first image scan includes obtaining an amplitude of a first signal from a location in the image associated with a first time. A second image scan includes obtaining an amplitude of a second signal from the same location in the image associated with a second time. A third image scan includes obtaining an amplitude of a third signal from the same location in the image associated with a third time. Subtraction involving such image scans includes a subtraction of amplitudes of signals from the same location.

Basically, applicant's claim 1 requires subtracting time-varying signals received from the same location to obtain a time-varying difference signal whereas Lizzi discloses subtracting the amplitudes of two time-varying signals received from the same location to obtain a difference in amplitudes.

Claims 16 and 30 likewise require deriving a time-varying difference signal or a set of time-varying difference signals, whereas Lizzi only discloses differences in amplitudes of time-varying signals.

The Examiner's rejection of claim 5, as being "obvious", under 35 U.S.C. 103, is respectfully traversed. The Examiner rejects this claim as being unpatentable over Okazaki or Lizzi or further in view of Dory and further in view of Cain '657. Claim 5 depends from claim 1, and applicant's previous remarks concerning the patentability of claim 1 over Okazaki and Lizzi are herein incorporated by reference. Further, Cain adjusts phase to refocus and not to reduce motion artifacts as required by applicant's claim 5.

The Examiner's rejection of claims 6-7, 11-12 and 20-21, as being "obvious", under 35 U.S.C. 103, is respectfully traversed. The Examiner rejects these claims as being unpatentable over Okazaki or Lizzi and further in view of Dory '258. Claims 6-7 and 11-12 depend from

claim 1, claims 20-21 depend from claim 16, and applicant's previous remarks concerning the patentability of claims 1 and 16 over Okazaki and Lizzi are herein incorporated by reference. Further, the potentiometer 74 of Dory provides a variable mix of the latest image stored and the differential image and does not scale a difference signal as required by applicant's claim 6.

The Examiner's rejection of claims 8 and 22, as being "obvious", under 35 U.S.C. 103, is respectfully traversed. The Examiner rejects these claims as being unpatentable over Okazaki or Lizzi or further in view of Dory and further in view of Geiser '470. Claim 8 depends from claim 1, claim 22 depends from claim 16, and applicant's previous remarks concerning the patentability of claims 1 and 16 over Okazaki and Lizzi are herein incorporated by reference.

The Examiner's rejection of claims 13-15 and 25-29, as being "obvious", under 35 U.S.C. 103, is respectfully traversed. The Examiner rejects these claims as being unpatentable over Okazaki or Lizzi or further in view of Dory and further in view of both Dory and Geiser. Claims 14-15 depend from claim 13, claims 26-29 depend from claim 25.

Claim 13 requires receiving time-varying first and second signals  $F_1$  and  $F_2$  (see figures 4-5) from the same location and subtracting the second signal from the first signal to derive a time-varying difference signal (see figure 7). As previously discussed, Okazaki only discloses differences in amplitudes of time-varying signals, and Lizzi only discloses differences in amplitudes of time-varying signals.

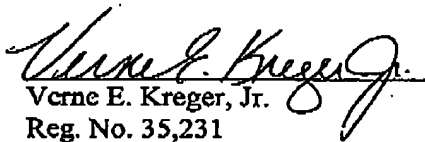
Claim 25 requires receiving first and second sets of frames comprising a plurality of time-varying imaging ultrasound wave signals from the same location during two different time periods and subtracting the time-varying imaging ultrasound signals of the second set of frames from the time-varying ultrasound signals of the first set of frames to derive a time-varying difference signal. As previously discussed, Okazaki only discloses differences in amplitudes of time-varying signals, and Lizzi only discloses differences in amplitudes of time-varying signals.

Further, the potentiometer 74 of Dory provides a variable mix of the latest image stored and the differential image and does not scale a difference signal as required by applicant's claims 13 and 25.

The Examiner's rejection of claims 31-32, as being "obvious", under 35 U.S.C. 103, is respectfully traversed. The Examiner rejects this claim as being unpatentable over Okazaki or Lizzi or further in view of Dory and further in view of Fujimoto '700. Claims 31-32 depend from claim 30, and applicant's previous remarks concerning the patentability of claim 30 over Okazaki and Lizzi are herein incorporated by reference.

Inasmuch as each of the rejections has been answered by the above remarks, it is respectfully requested that the rejections be withdrawn, and that this application be passed to issue.

Respectfully submitted,

  
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